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SYMPOSIUM ON THE SIGNIFICANCE OF BLOOD SUGAR*

INTRODUCTORY REMARKS OF THE CHAIRMAN

H. O. MOSENTHAL
New York

Members of the Section of Medicine, members of the New York Diabetes Association, and guests:

A brief survey of the purpose of this symposium may not be out of order.

Every doctor treating diabetes patients is constantly confronted with the question: What is the ideal blood sugar level? There are some facts in regard to blood sugar about which we are well informed; there are others, however, concerning which we are ignorant.

We know the normal figures for blood sugar and also that in many older persons the blood sugar concentration often exceeds the accepted normal averages; it is also appreciated that in many cases of diabetes under careful insulin treatment the blood sugar fluctuates a great deal and may not be under satisfactory control at certain times of the day, especially in the morning.

What we do not know is how the level of the blood sugar in itself, apart from glycosuria or acidosis, affects human beings. Does a high concentration of sugar in the blood favor bacterial growth and the occurrence of infectious diseases? Is hyperglycemia responsible for the rapid development of vascular changes so often found in diabetes? What effect has an elevated blood sugar upon the nutrition of the tissues such as the heart muscle?

* Presented at a Combined Meeting of the Section of Medicine and the New York Diabetes Association, January 21, 1936.

Clinicians are eagerly awaiting an answer to these problems so that the objectives of treatment in diabetes may be more clearly defined.

There are in this country no scientists or clinicians better qualified than the three essayists of the evening, to inform us upon these questions and it is with genuine pleasure and anticipation that we welcome our guest speakers.

The Effects of Carbohydrates on Bacterial Growth and Development of Infection

Stanhope Bayne-Jones
New Haven

There are two parts to the title of my paper and I shall use the liberty presented by that title to deal with the two parts separately, and then try to bring some of this knowledge together and indicate possible conclusions. I may say at the start that while we know a great deal about the effect of carbohydrates upon bacterial growth in test tubes, we know relatively little about the processes of infection and resistance. There is even less information about the effect of various concentrations of carbohydrates upon the functions of the cells concerned in opposing bacterial growth in tissues. It will be difficult, therefore, to indicate the practical bearings of this incomplete knowledge or to describe the definite relationships of all the parts.

If you will permit me to do so, I will review, for those who are not working in the bacteriological field, some of the things with which the bacteriologist is concerned when he studies the effects of carbohydrates upon the growth of bacteria.

Multiplication of organisms is usually regarded as the evidence of growth. For practical purposes, little misunderstanding will occur if increase in numbers of cells of the normal size is taken as the definition of growth. Nevertheless, this definition may at times be faulty. From a number of years of study of motion pictures and calorimetric observations of bacterial cultures I know that multiplica-